IFIP newsletter
International Federation for Information Processing

Editor:
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PROGRAMMING IN THE GIGANTIC

WG2.4 Meeting

IFIP's Working Group on System Implementation Languages (WG2.4) held its 17th meeting in Deer Isle, Maine 7-11 October 1985. Thirty-three attendees heard 28 talks on a variety of topics in the area of programming languages, most talks being followed by lively—occasionally heated—debate.

One of the talks, entitled *Beyond Programming-in-the-large: the Next Challenges for Software Engineering,* discussed the increased complexity of software systems and the approaches

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10TH WORLD COMPUTER CONGRESS COMING IN SEPTEMBER

Dublin is Site

In three months' time, IFIP will hold its premier event—the triennial World Computer Congress—in Dublin. From 1 to 5 September, many of the world's most noted information processing authorities will address the participants of IFIP Congress '86. The Irish Computer Society, host of the Congress, is looking forward to welcoming some 2000 delegates.

IFIP Congress '86 will be the 10th such event. In its earliest days, running the Congresses was IFIP's main activity. Now, 25 years later, IFIP organizes many events, some even larger than the Congresses; however, the IFIP Congresses remain among the world's most prestigious international information processing convocations, as well as one of IFIP's most important activities.

The program of Congress '86 will be a major departure from those of previous years. The title, *Informatics—a new awareness* indicates the stress laid on bringing awareness of developments in various disciplines to practitioners of other disciplines. Program Committee (PC) chairman Prof. Dines Bjørner (DK) summarizes this emphasis as follows: "Sessions will reach out and across, and emphasize transfer of ideas, techniques, methods, and applications. If you wish to stay abreast by keeping well-informed about the breadth and depth of informatics and the promises of the future, then you should attend IFIP Congress '86. The Programme Committee is dedicated to making IFIP Congress '86 a most rewarding computer conference for you."

More Invited Speakers

The PC has invited more speakers and planned more panels than in previous Congresses, while decreasing the number of submitted papers on the program. There will be 48 invited speakers, 24 panels, and 24 sessions for 72 submitted papers. In order to provide the broadest possible perspectives, the PC has invited "responders" to speak following the invited papers and has encouraged the responders to present viewpoints that differ from the main speakers'. The countries with the largest numbers of speakers are the U.S.A., France, Japan, Federal Republic of Germany, and United Kingdom.

This Congress will pay special attention to Informatics in a Developing World. Some of the issues relevant to developing nations that will be analyzed and discussed are: strategies for technological self-reliance, creation of qualified manpower, identification of innovative applications to socio-economic development, and steps to make information processing technology more easily accessible and acceptable to everyone.

The PC has listed seven categories of delegates and identified the sessions that should be of the greatest interest to each category. They are: users, application developers, software systems and tool developers, computer systems developers, researchers, management, and policy makers and planners.

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COUNCIL MEETS IN LISBON

IFIP's Council and other IFIP bodies met in Lisbon 10-13 March 1986, holding a meeting that was unique in two respects: it marked the inaugural meeting of the Activity Development Board (ADB); and it was scheduled simultaneously with a week-long Portuguese Computer Society (API) seminar that surveyed IFIP and the present state of information processing. (See the article on page 9.)

The ADB was established by IFIP's General Assembly (GA) in September 1985 to replace the Activity Planning Committee. (See the ***IFIP*** *Newsletter* of December 1985, page 4.) Now the ADB both approves future plans of Technical Committees (TCs) and other related bodies and provides a forum for the exchange of ideas about IFIP's technical activities. IFIP's technical work is reviewed by Council and GA, too. Almost all of the TC chairmen attended the ADB meeting. Because of the increased scope of ADB activity, it was decided to eliminate the Council meetings that used to precede the August/September GA meetings. (The Executive Body will meet in Las Vegas 16-17 June to handle any issues that require immediate attention.)

Another role of the ADB is to encourage and nurture new activities. A case in point was a proposal by Dr. Rae Earnshaw (GB) to initiate IFIP activity in the area of computer graphics. IFIP vice-president Mr. Graham Morris (GB) was charged with consulting TC chairmen in order to determine what sort of IFIP entity (perhaps a Specialist Group) should be established and reporting his conclusions to the GA in August.

Other discussions in the ADB concerned IFIP publications, IFIP participation in the development of standards, and the future direction of IFIP. One report concerned the formation of the African Regional Computer Confederation (discussed in an article on page 4).

IFIP president Dr. Kaoru Ando (J) noted in his report to the Council that in 1985 IFIP sponsored 58 technical events (conferences, workshops, etc.). This was 25% more than IFIP held in 1984. IFIP treasurer Mr. Owen Dalton (IRL) reported a surplus of approximately 2000 Sfr in 1985. He considers this small surplus a good sign—IFIP is spending the funds it has available to do the work it is constituted to do.

TC Reports

During the presentation of TC reports, it was observed that the *Unesco/IFIP Modular Curriculum in Computer Science,* written in 1981 by the TC on Education (TC3), has been widely distributed by the United Nations Economic, Scientific and Cultural Organization (Unesco) to developing countries and that Unesco continues to receive requests for it. Council heard the final report on the World Conference on Computers in Education 85 (WCCE/85) by Organizing Committee chairman Prof. Gerald Engel (USA). The program was outstanding, and participants were very involved, attending sessions until late at night. Unfortunately, the anticipated surplus was not realized, to the considerable disappointment of IFIP. TC3 chairman Prof. Dr. Wilfried Brauer (D) discussed the next WCCE to be held in Australia in 1990. Plans include the interesting concept of pre- and post-Conference activities in New Zealand and Japan.

Mr. Robert Iau (Singapore) reported on plans for SEARCC '86, the 6th biennial international computer conference and exhibition of the Asia-Pacific region, to be held in Bangkok 17-21 November. This conference is sponsored by IFIP and organized by the South East Asia Regional Computer Confederation (SEARCC), a member of IFIP.

Congress '86

Significant discussions at the Council meeting concerned plans for IFIP Congress '86. The program is a major departure from past Congresses, and great enthusiasm was expressed. (See the article on Congress '86 on page 1.) The selection for the site of IFIP Congress '92 was also discussed. (See page 9.)

It was noted that the IFIP memberships of Brazil and Morocco had been withdrawn and that Centro Latinoamericano de Estudios en Informatica (CLEI) has not yet assumed membership officially in IFIP.

IFIP's Medical Informatics Association (IMIA) continues to conduct a very active and successful technical program. (See the article on page 3 about IMIA's conference MEDINFO 86.) An ad hoc committee was appointed to study the relationship between IFIP and IMIA. It was noted that some specialist conferences sponsored by IFIP (e.g., MEDINFO and WCCE) are now larger than some IFIP Congresses.

Computerization of IFIP

Council authorized the purchase of a personal computer for maintenance of the database of IFIP events by the IFIP Conference Officer Mr. Jean Navez (B). It was noted, with humor, how little IFIP itself uses information processing technology. The Council also voted to redesign the Silver Core award (presented for service to IFIP). Henceforth, the award will be in the form of a plaque and a silver pin or tie-tack. Previous recipients of the award will also receive the pin.

Council heard reports from two of its Affiliate Members. They spoke in favor of greater cooperation between IFIP and its Affiliates. It was agreed that, despite good will on both sides, there is substantial room for improvement.

The Council was adjourned Thursday evening with many thanks to the Portuguese hosts for their warm hospitality. IFIP trustee Mr. Luis Penedo replied in behalf of API that Council had been welcomed to Portugal with informality, as good friends are treated.

IFIP COUNCIL

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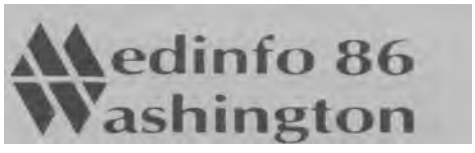
MEDINFO 86 TO BE HELD IN WASHINGTON IN OCTOBER

Major Medical Informatics Conference

The Fifth World Congress on Medical Informatics, MEDINFO 86, will be held in Washington, D.C., 26-30 October, sponsored by the International Medical Informatics Association of **IFIP.** The rich and varied program will include paper presentations, panels, workshops, tutorials, scientific demonstrations, commercial exhibits, "meet-the-expert" sessions, and a software exchange.

Prof. Jan van Bemmel (NL) and Dr. Donald Lindberg (USA) are chairmen of the Program and Organizing Committees, respectively. Dr. Richard Tanaka (USA), an Honorary Member and a past president of **IFIP,** is chairman of the U.S. Council for MEDINFO 86, a non-profit corporation sponsored by 12 leading medical and engineering societies in the United States.

The scientific program has been designed to appeal to a wide range of interests among health care and informatics specialists. Three categories of papers will be heard: original research articles, papers describing medical systems, and analytical/review or opinion pieces. There will be up to eight parallel sessions throughout the conference. So far, more than 1300 "intents" to submit papers have been received from 52 nations.



Seminars and Tutorials

Preceding MEDINFO 86 will be seminars and tutorials organized by the Symposium on Computer Applications in Medical Care (SCAMC). Evening workshops and round table discussions during MEDINFO 86 have been organized by the American Association for Medical Systems and Informatics.

Plans are under way for the largest commercial exhibition ever held in conjunction with MEDINFO. Two exhibit halls will house more than 150 exhibitors. The exhibition will be open to all participants from 26 to 29 October.

An exciting program of non-commercial scientific demonstrations is also being planned to run throughout the Congress and is being organized by SCAMC. Systems will be shown to attendees in one of two formats: theater style demonstration sessions or "hands-on" opportunities for small groups. Demonstration sessions are anticipated in areas as diverse as decision support, computer-assisted instruction, and access to clinical databases.

At noon each day, opportunities will be provided for participants to meet with world experts in a wide variety of areas in medical informatics. No formal agenda is planned; rather, open discussion of issues, problems, and prospects will be encouraged. Sessions will be limited to 15 persons.

Software Exchange

A new feature for MEDINFO 86 will be a software exchange. It is designed to provide a forum for the demonstration and exchange of software currently used by office practitioners. Presentations will be made by the originators and distributors of these packages. Applications to be addressed include appointments, billing, and storage of all or part of the medical record. Opportunity will be provided for the sharing of public domain software.

Finally, a number of scientific-tours will be offered during MEDINFO 86.

At the closing ceremony, gold medals will be awarded to the authors of the three research papers judged to be the best written and presented at MEDINFO 86.

The proceedings will be published by North-Holland in two volumes, which will be available to all participants at the time of registration.

Previous MEDINFOs have been held in Stockholm ('74), Toronto ('77), Tokyo ('80), and Amsterdam ('83). MEDINFO 89 will be held in the People's Republic of China.

For more information, contact-

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IFIP NEWSLETTER

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National Abbreviations Used in Newsletter

A	Austria	F	France	P	Portugal
AUS	Australia	GB	United Kingdom	PRC	China
B	Belgium	I	Italy	SEARCC	South East Asia Regional Computer Confederation
BG	Bulgaria	IL	Israel	SF	Finland
CDN	Canada	IND	India	SU	U.S.S.R.
CLEI	Centro Latinoamericano de [studios en Informatica	IRL	Ireland	TN	Tunisia
		J	Japan	USA	U.S.A.
CS	Czechoslovakia	K	Rep. of Korea	WRN	Nigeria
D	Fed. Rep. of Germany	N	Norway	ZA	South Africa
DK	Denmark	NL	The Netherlands		
E	Spain	NZ	New Zealand		

CONGRESS '86 cont. from page 1

A major exhibition—the Computer and Business Equipment Show 1986—will be held in conjunction with Congress '86 from 2 to 5 September. Organized by the Irish Business Equipment Trade Association (IBETA), it will be the largest exhibition of information processing equipment and services ever presented in Ireland. It will be held in the Simmonscourt Exhibition Centre, the largest in Ireland. Approximately 6000 square meters of exhibition space are available.

Other activities planned during Congress '86 are a computer book and instrument exhibition and a computer art exhibition. The former will be in the Long Room of Trinity College Library, home of the famous Book of Kells. Among other fascinating displays will be some of the works of Charles Babbage and George Boole, who was the first professor of Mathematics in University College, Cork.

In addition to the technical agenda, a social program for delegates and accompanying persons is being planned, including tours, receptions, and a banquet.

Cead Mile Failte

The Organizing Committee chairman, Mr. Dudley Dolan (IRL), extends an invitation to all delegates: "This opportunity in September to participate in a world-wide gathering of computer professionals is available only once every three years. The Congress site is the campus of Trinity College, Ireland's oldest University, which is conveniently located in the centre of Ireland's capital city, Dublin. Plan now to come yourself...and why not bring your family? We would love the opportunity to make you feel at home. We look forward to bidding you Céad Mile Failte' (One hundred thousand welcomes)."

The registration fee for the Congress is 400 IRE up to 15 June and 425 IRE after that date. To register, or for further information, contact-

IFIP Congress '86
44 Northumberland Road
Dublin 4, Ireland
tel. (01) 688244
telex 31098
telegrams: Congrex, Dublin

U.S. inquiries should be sent to-

IFIP Congress '86
c/o AFIPS
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Reston, VA 22091, U.S.A.
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AFRICAN COMPUTER CONFEDERATION

In October 1985, representatives of three African countries met for three days in Lilongwe, Malawi to establish and plan the African Regional Computer Confederation (ARCC). The presidents of the Nigeria Computer Association, the Zimbabwe Computer Society, and the Computer Society of South Africa met with IFIP trustee Mr. Hennie Leroux (ZA) to plan the course of the Confederation. IFIP encourages the formation of such regional confederations. Two have already been voted membership in IFIP: one in Southeast Asia and one in South America.

The aims of ARCC will be to foster cooperation among the member societies, to operate in accordance with the aims and objectives of IFIP, and to become a Regional Member of IFIP. A constitution was drafted and is being studied by the societies represented at the Malawi meeting. In addition, a 6-year plan was generated, including tutorials by members of IFIP Technical Committees (TCs), regional conferences held by IFIP's TC on Education (TC3), and the first IFIP African Regional Conference in September 1988.

The group is currently in contact with leaders of the computer societies of the following African nations, in order to invite them to join ARCC: Republic of Benin, Gambia, Ghana, Kenya, Liberia, Malawi, Sierra Leone, and Zambia. ■

PROFESSOR FRED MARGULIES

Fred Margulies was born in 1917 in Vienna and studied Mechanical Engineering at the University of Technology in Vienna. From 1947 to 1951 he worked as an engineer. In 1951 he entered the trade union movement, where he held numerous positions until his retirement in 1980. His special interests were in automation and information processing and their social impacts. Three very different professions united in the person of Fred Margulies: the trade union officer, the social scientist, and the computer scientist.

At age 42 he returned to the halls of the Technical University to enroll in *Modern Computing Technology,* and it was there that I came in contact with him. His interest was solid, and his questions clear. He arranged a series of symposia as common enterprises of the unions and the university. The culmination was the event for which so many are grateful to him: the IFIP Conference *Human Choice and Computers* of 1974 in Vienna. Without this conference, IFIP Technical Committee TC9 on social aspects of information processing would never have come into existence. It is mainly thanks to Fred Margulies that this topic became the subject of international cooperation so rapidly.

In the International Federation of Automatic Control (IFAC), Fred Margulies held several offices from 1972 until his death. He was also a founding member and a member of the executive board of the Austrian Computer Society.

In IFIP, Fred Margulies was vice-chairman of TC9 since its founding, and in 1982, at a time of special difficulties, he took over the chair for one year. Fred Margulies was also a productive member of the Working Group on Computers and Work (WG9.1) since its founding.

The list of publications by Fred Margulies contains almost 30 papers. He taught at the Technical University from 1975 until his death. The President of the Austrian Republic appointed him Professor, which was deserved far more than usual: not only was he a teacher of younger students, but he taught all of us. He did not lecture merely into the ears of his colleagues—he lectured by his example.

Fred died very unexpectedly on 10 February 1986 at his desk at the Technical University of Vienna. Information processing and the trade union movement lost a unique personality, and many of us lost a reliable friend, a man of conciliation and human communication who achieved an amazing amount by bringing people together. His memory will surely be preserved—the legacy of his contributions will stay with us for many years.

*Heinz Zemanek**

* Prof. Dr. Zemanek is an Honorary Member and a past president of IFIP

WG2.4 MEETING cont. from page 1

being taken to manage these systems. Quotations from a paper based on this talk, presented by Prof. Mary Shaw (USA), are given here: *

> Software engineering has progressed from solving small problems to solving quite large ones. Each new generation of systems has been more ambitious than the previous, and the new problems have emerged as a consequence of this increase in scale.
>
> In the 1960s, the problem was writing understandable programs, and the solution was implemented through high-level languages. In the 1970s, the problem was organizing large software development, and the solution was implemented through tools for programming-in-the-large. Development of large systems requires the coordination of many people, maintenance and control of many versions, and remanufacture of old versions.

Programming-in-the-large

> To explain the nature of the change from programming-in-the-small to programming-in-the-large, we can compare the shifts in several attributes of the problems and activities:
>
> *Characteristic problems:* The major focus shifted from emphasis on particular algorithms to emphasis on interfaces, system structures, and management of the people involved in system production.
>
> *Dominant data issues:* The chief concern about the data shifted from data structures and data types to databases whose lifetimes transcend the execution of particular programs.
>
> *Dominant control issues:* The predominant view about the flow of control shifted from the view that programs execute once and terminate to a view of an assembly of computational modules which are to execute continually.
>
> *Specification issues:* The shift in control issues led to a change in specification concerns. Whereas terminating programs can be specified as mathematical functions, the specification issue in a continually executing system deals with the sequence of states through which the system passes and the side effects of those states.
>
> *Character of state space:* The state space of a piece of software shifted from a small, easily comprehensible state space to a large state space with complex structure.
>
> *Management focus:* The management unit shifted from the individual effort to team efforts directed at developing and maintaining large systems.
>
> *Tools and Methods:* Whereas the programmer-in-the-small uses data structures, compilers, linkers, and loaders, the tools of the programmer-in-the-large are programming environments, integrated tools, version control, configuration management, document production, and report generation.

In the decade since software engineering recognized programming-in-the-large as a significant issue, the complexity of software systems has taken another leap. Software engineers must now deal with complex systems in which software is one of many components in a large heterogeneous system and in which the software is expected to serve as a surrogate for a human programmer, taking an active role in the development and control of software systems. We will describe those new modes of operation as *program-as-component* and *program-as-deputy*, respectively.

Program-as-Component

> The role of *program-as-component* arises in large, heterogeneous systems. To capture the nature of this shift of attention, we can consider the same attributes as before:
>
> *Characteristic problems:* The major focus of design is shifting from algorithms and interfaces to the integration of the system as a whole.
>
> *Dominant data issues:* We need integrated data bases that include not only symbolic and numeric information but also information about the physical distributed system—in which communication is a very significant issue.
>
> *Dominant control issues:* Software must now provide control over complex systems that may include data subject to physical or mechanical constraints as well as the usual purely symbolic data.
>
> *Specification issues:* Software specifications must address interfaces with non-software elements of the system as well as with other software elements.
>
> *Character of state space:* The state space of a large heterogeneous system may be very large. In addition, the structure may be dynamically reconfigured, and it may contain physical elements as well as symbolic elements.
>
> *Management focus:* The heterogeneous character of these systems increases demands on management to coordinate design, development, construction, and integration schedules of very different characters.
>
> *Tools and Methods:* These systems require real-time control and interfaces usable by layman; they must be capable of running complex control problems with very little human intervention.

Program-as-Deputy

> The role of *program-as-deputy* arises when large, creative portions of the program development process are delegated to software. This shift has been taking place gradually ever since the first symbolic assembler assigned addresses to variables. As time has passed, more and more expertise about various aspects of the software development process has been incorporated in programs which perform increasingly creative subtasks within the software development and management process (e.g., compiler compilers). The attributes of this activity are:
>
> *Characteristic problems:* The major focus is on incorporating expertise and judgement in software tools.
>
> *Dominant data issues:* Since software is now automatically carrying out some aspects of the software development process, we must represent not only the data of the application domain but also knowledge about the domain's specific expertise and the state of the software process.
>
> *Dominant control issues:* Programs must not only incorporate expertise but must also learn from their own prior use.
>
> *Specification issues:* Emphasis has shifted from reuse of code to reuse of design through automation.
>
> *Character of state space:* We must extend the state space to cover the development processes as well as the application domain.
>
> *Management Focus:* Knowledge about the programming process and about the application domain must be acquired and managed.
>
> *Tools and Methods:* Program generators are significant early tools. They are being joined by learning systems and knowledge representation systems.

The next meeting of WG2.4 takes place in June in Trondheim, Norway, followed by an International Workshop on *Advanced Programming Environments* to be held 16-18 June, sponsored by WG2.4. Prof. Shaw is Program Committee chairman; Dr. William Waite (USA), chairman of WG2.4, is general chairman; and Mr. Reidar Conradi (N) is Organizing Committee chairman. ▬

IFIP
PUBLICATIONS AVAILABLE

New **IFIP** workers should be aware of the availability of the following **IFIP** publications from the **IFIP** Secretariat:

Information Bulletin
Statutes and Bylaws
Standing Orders
*What Is **IFIP?***
Annual Report
articles about Technical Committees

* © IFIP

Mr. Jacques Fourot, secretary of **IFIP** since 1981 and France's representative to the General Assembly since 1980, was born in Paris in 1928. After receiving an MBA degree from Ecole des Hautes Etudes Commerciales and a law degree from Paris University, he joined Compagnie des Machines BULL in 1952, where he has spent all of his professional career.

Starting as a sales trainee, he has risen in the ranks of BULL—to district manager, sales manager for Industry and Commerce, Sales Promotion Manager (introducing the first generation of BULL computers), manager of General Electric's Information Systems Group's Advanced Development Planning Operation, head of Honeywell BULL's Information Services Business, Director of Corporate Marketing for CII-Honeywell BULL, and Deputy Director of the Corporate Strategy and Marketing Operation of the new BULL Group.

In 1966, Mr. Fourot was transferred to the United States, spending four years at the headquarters of General Electric's Information Systems Group in Bridgeport, CT, where he remained until his return to Paris.

He has played a major role in France's member society to **IFIP,** Association Française pour la Cybernétique Economique et Technique (AFCET), coordinating AFCET's international activities and promoting it within the business community. In addition to his post as **IFIP** secretary, he is vice-chairman of the **IFIP** Committee for International Liaison (ICIL), acting as "our man in Paris" to facilitate relations between the United Nations Economic, Scientific and Cultural Organization (UNESCO) and the **IFIP** Committee: Informatics for Development (ICID). This means negotiating UNESCO support for events sponsored by **IFIP,** particularly on behalf of delegates from developing countries. A new dimension of **IFIP's** relationship with UNESCO will hopefully emerge from the new Intergovernmental Informatics Program (IIP), which should draw on **IFIP's** technical resources. (See the article on page 2 of the June 1985 ***IFIP*** *Newsletter.)*

Mr. Fourot and his wife Brenda, who owns a ladies' fashion boutique, live in the center of Paris, with their three children. Apart from a "not-too-competitive" tennis game, his favorite pastime is locating new and interesting restaurants, which is an almost endless task in Paris.

NEWS FROM IFORS

The International Federation of Operational Research Societies (IFORS) a sister member to **IFIP** in the Five International Associations Coordinating Committee (FIACC), has a new slate of officers: Prof. Jacques Lesourne (F), president; Prof. Dr. Heiner Müller-Merbach (D), past president; Dr. Seth Bonder (USA), Mr. Bob Kavanagh (AUS), and Mr. Frederick Ridgway (IRL), vice-presidents; Dr. Jack Borsting (USA), treasurer; and Ms. Helle Welling (DK), secretary.

The 11th triennial IFORS Congress will be held in Buenos Aires 10-14 August 1987. Its theme will be *OR: Supporting Decisions Around the World.* The Eighth European Conference on Operational Research will be held 16-19 September this year in Lisbon.

In one of his letters to the IFORS membership last year, then president Müller-Merbach made a point that is of interest to computer scientists. The following is taken from that typically perceptive letter.

A friend from Britain was quite surprised to hear that German cocks cry "kikeriki." British cocks cried "cock-a-doodle-doo." We went to a farm, and indeed the cocks cried "cock-a-doodle-doo" to his ears and "kikeriki" to mine. In France they cry "cocorico," in Spain "quiquiriqui" [and in Denmark "kykliky"—Ed.j. Neither the United Nations nor IFORS can definitively decide how they really cry. The animals do not use any of our "natural" languages, and we try to model their nature by the most fascinating tool of man's culture: language.

This is what modelling is all about: representation of reality by tools of man's culture: natural and formal languages, drawings, pictures, sculptures, etc.

Save for a few trivial cases, models are never "isomorphic" copies of reality. They are, like "kikeriki" and "cock-a-doodle-doo," substitutes (ersatz) of reality and serve the purposes of understanding and communication. The latter requires consensus about the model. A consensus for the model "kikeriki" would never be achieved in the English speaking world, nor would the model "cock-a-doodle-doo" be accepted in other languages. In a similar way, models in Operational Research/ Management Science (OR/MS) represent reality and depend upon consensus. And corresponding to the influence of ones mother tongue on his world view, our models reflect our particular schools of thought. Interpersonal acceptance of any model or approach requires consensus between the model designers and the model users.

There exists no way to measure objectively how "well" a model type or an approach represents reality—save for obvious technical errors. Instead, it depends on the consensus whether a certain model type or approach is successful in a particular case or not. If a model and its results provide the participants with additional understanding and support communication between them, the very model has proven its purposefulness.

NEW ZEALAND COMPUTER SOCIETY

Information Processing Among the Maori

The New Zealand Computer Society (NZCS) has celebrated its 25th anniversary with the publication of a book, *Looking Back to Tomorrow,* edited by Cdr. Bill Williams. This small volume contains the history of the NZCS, predictions of the future of the computer, fascinating biographies of pioneers of the New Zealand computer industry, and other interesting articles.

In the introduction, Dr. Colin Boswell, president of the NZCS from 1983-85, writes: *

> The NZCS was formed 25 years ago, before the first computer had been installed in this country. New Zealanders were returning from overseas impressed by what they had seen of the new technology. They, and others in New Zealand, were aware that this country too could use these techniques to its benefit, and that the introduction of computers here was only a matter of time. A number of these far-sighted individuals met together and formed what was to become the NZCS, the body representing computer professionals in New Zealand.

One of the most interesting articles in the book concerns human "information processing" among the Maori, the Polynesian people native to New Zealand. Following are some excerpts from this article, *Aotearoa [New Zealand] before the Computer,* by Dr. Whatarangi Winiata. *

> Any accumulation of information which is accessible to the processor or to others is an information system, regardless of the type of information being stored or the method of storage. It follows that we have had human information systems for as long as we, as a species, have had the dual capacity to store information and to retrieve it as needed. It also follows that the nature of such systems and of their development will be as diverse as the human cultural scene, because the choice of information to be stored is determined by its prospective users, and the method of storage chosen is from the options available to them. The users, their needs and their options are culture specific. Information systems evolve in response to the needs of the community.

* © New Zealand Computer Society 1985

In the case of the Maori, the culture had not designed a written language, so they had to rely heavily on the memorising capacity of the mind for storage and on a variety of external stimuli to assist with the process of retrieval. The task of selecting the minds to be developed to serve this purpose and of training those minds was assigned to *te whare wananga,* the house of learning, the object of which was, "To preserve all desirable knowledge and to hand it down free of any alteration, omission, interpolation, or deterioration."

Feats of Memorisation

It is clear that the commitment of those chosen had to be substantial, and the energy expended in fulfilling the job must have been considerable, even for the most talented. We have some insights into the remarkable accomplishments of some such people from a researcher who reported that during one winter he obtained from one Maori elder, the words of "no less than 406 songs, together with much information of an explanatory nature pertaining to them. All of these songs were given from memory—not one was in written form."

In a second illustration of memorising power, the researcher cited one person who during three days "...traced the descent of his people from an ancestor who flourished 34 generations ago. The result was a long table of innumerable branch lines, of a multitude of affinitive ramifications." In this instance the witness gave "...much evidence as to occupation, extra-tribal marriages,...and the genealogical table contained well over 1400 names."

In the *te whare wananga,* knowledge, under varying restrictive practices associated with different levels of *tapu* (sacredness), was taught to highly restricted and carefully selected classes. Very few people were entrusted with esoteric knowledge which was *tapu* and could be transmitted and received only by people who, themselves, were in *a* state of *tapu.* Maori information systems, of course, were impenetrable if the repository resolved that it should be that way.

Memory Aids

With all this material to be remembered, it is not surprising that the Maori resorted to external aids to memory. Mnemonic (and other) aids to human memory systems spanned the full range of human endeavour, with the effect of expanding the effective memory capacity.

Clearly, a Maori information system, with well selected human repositories of information fully trained in mnemonic and other systems of memory aids and in a state of *tapu,* would be difficult, if not impossible, to replicate, even on our most sophisticated computers.

Maori information systems, which regrettably are in disarray, would have been, and still could be, greatly strengthened by the modern computer. In the next quarter century, some of us will try to ensure that this will occur. ■

INTERNATIONAL CONFERENCE ON DATA COMMUNICATIONS

*by Mr. Chris Guy (ZA) **

More than 280 delegates gathered between March 17th and 19th near Johannesburg for an International Conference on Data Communications, organised by the Computer Society of South Africa in conjunction with IFIP's Technical Committee on Data Communication (TC6). Speakers from five continents, including speakers from South Africa, presented twenty papers. These covered a wide range of topics relating to Data Communications and reflected the increasing importance of this field to the computer community.

The conference was closed by Dr. Kaoru Ando **(J),** president of **IFIP.** Dr. Ando drew attention to the fact that **IFIP** had organised no less than 58 events around the world in 1985 and was successfully meeting the challenge of adapting to the changing environment of information processing technologies. He went on to state that **IFIP** advocates contributions to the less developed countries and is doing its best to expand its technical activities to embrace the needs of developing nations under the auspices of the **IFIP** Committee: Informatics for Development (ICID).

Dr. Ando said that he felt that the conference which had just taken place was a good example of a regional conference, in terms of the location, the subject, and the participation of a member society. He expressed the hope that the conference had contributed to furthering better understanding and improving the working relationships between the **IFIP** member societies throughout the world. ■

* Editor of the Computer Society of South Africa's newsletter, *IT News*

DECISION SUPPORT SYSTEMS

WG8.3 Holds Workshops

IFIP's Working Group WG8.3 on Decision Support Systems (DSSs) met in Dubrovnik 6-11 October 1985. During this week, several workshops were also held.

Three task groups are currently active in WG8.3. The Knowledge Representation and Organizational Theory task group was established to develop a coherent approach to modelling organizations and the social interactions within them, with the aim of identifying, diagnosing, and evaluating (and, hopefully, solving) problems faced by managers. The group was formed in 1982, and a publication of its work is due this year.

Work was also initiated in Dubrovnik on the topic of functional specifications of DSSs. Part of the discussions was devoted to defining the scope of the task of deriving functional specifications from cognitive models of decision-making, and part was devoted to defining elements of a framework for knowledge-based DSS development tools.

A new task group was created in Dubrovnik on Information Needs for Decision Effectiveness. The objective is to bring together people from different fields, all involved in research on decision-makers, in order to establish a coherent framework for analyzing decisions from a DSS point of view. In addition to several informal presentations, a keynote paper, *The Expertise of Extracting Expertise for Expert Systems*,* was presented by Prof. Ken Bowen (GB), parts of which are quoted here.

Extracting Expertise

> Clearly, each one of you already uses many facilities, including each other, to support you in whatever role you play. You draw data and ideas from many sources, and you use many devices to aid your own memory retrieval and to extend your logical processes. I shall be concerned mainly with similar but larger systems of this type.
>
> L.D. Phillips defines a decision-support system as "any system that helps the manager to form preferences, make judgements and take decisions." He sees three main components to decision technology: *people,* mainly the problem owners who provide essential expertise; *information technology* that stores data, processes it into information and provides analysis; and *preference technology* that helps to clarify value judgements.
>
> A decision-support system must include those who have information and preferences relevant to the problem, for which they have some responsibility; computer systems that aid modelling analysis; and 'facilitators' who provide the framework in which preference judgements are encouraged and expressed, where possible in quantitative form, against a structure which represents the agreed, formulated problem.
>
> Such systems might work if the facilitators could always be present and if the time scale of the decision process allowed time for the negotiations required in decision-conferences or some equivalent interactive method. In less favorable circumstances, the facilitator, for better or worse, must develop processes that the decision-makers understand and are willing and able to use *on their own.* To do this, he needs a representation of the cognitive processes of those he aims to help in order that his aids are properly matched to his clients. He needs to understand what expertise exists and how it will be used.
>
> **In** general, a decision-support system is not just a computer-system that can be used by managers as a straightforward tool. It is a contrived environment in which their experience can have **full** sway. Yet, in order to create this environment, it may be necessary to know a great deal about the decision-makers, their information and the environment for their decisions. This is particularly so when the facilitator cannot be present through the key phases of decision-making, when preferences are formed and shared and judgements are made. Normally, the facilitator can learn as he proceeds within the decision-making environment and can operate without *explicit* knowledge of his clients' value systems.
>
> So, whether for decision-support or for expert systems, there is a need for processes that formalize expertise. At present, it would seem that there is a profusion of software that has the potential to handle expertise when we have it, although this may beg the question of the form in which the expertise actually becomes available. The real questions, of course, is "how do we make expertise explicit?" ■

* © IFIP

PROFESSOR TOHRU MOTO-OKA

IFIP notes with sorrow the death of Prof. Tohru Moto-Oka, a leader in the fields of computer architecture and design automation and a significant contributor to IFIP's technical work.

Prof. Moto-Oka was born in Tokyo and received his education in electrical engineering at the University of Tokyo, completing his doctorate in 1958. He joined the faculty of the University and continued in that capacity until his death, last November. As chairman of the Fifth-Generation Computer Project's Promotion Committee, he was instrumental in establishing its direction. He was also active in the Japanese National Project for Scientific Super-Computers and innumerable committees, both in Japan and internationally. He was awarded, posthumously, the Zuihosho, the Order of the Sacred Treasure, by the Emperor of Japan last December.

Prof. Moto-Oka served as the Japanese representative to **IFIP's** Technical Committee on Digital Systems Design (TC10) and was the program chairman for its Working Conference on *Fifth Generation Computer Architecture,* in Manchester in July 1985. Noted TC10 chairman Prof. David Aspinall (GB), "He was a model member of TC10, and his presence enabled the development of a very successful conference, which brought together leading computer architects of fifth-generation computers from Japan, America, and Europe." Prof. Moto-Oka was also co-chairman of the Program Committee for **IFIP's** 7th International Conference on *Computer Hardware Description Languages and Their Applications* in Tokyo last August and was an invited speaker at **IFIP** Congress '83.

PORTUGUESE MEMBER SOCIETY HOLDS SYMPOSIUM

The Associação Portuguesa de Informática (API), the Portuguese member of **IFIP,** held a week-long symposium 10-14 March in Lisbon, during the time **IFIP's** Council was meeting there. (See the article about the Council meeting on page 2.) This permitted **IFIP** Technical Committee (TC) chairmen and other **IFIP** officers to speak at the symposium. The purposes of the Symposium were to give the Portuguese data processing community a view of the role and significance of **IFIP** and to increase API's activities in the fields of **IFIP's** TCs.

The symposium was opened by API president Eng. Raul Pereira da Costa. **IFIP** president **Dr.** Kaoru Ando **(J)** delivered the opening address, a discussion of the impact of technology, particularly information processing, on society. He preceded this with an overview of **IFIP.** Dr. Ando was followed by Prof. Dr. Heinz Zemanek (A), an Honorary Member and a past president of **IFIP,** who discussed the trends in information processing from informal to formal views and models. Also present at the opening session was Dr. Sequeira Braga, Portuguese Secretary for Transportation and Communications.

During the rest of the week, **IFIP's** TC chairmen and cognizant officers presented the work of **IFIP** and the state of the art in their areas of interest. Portuguese speakers also addressed the participants on subjects related to the TCs' areas.

The symposium was organized by **IFIP** trustee Mr. Luis Penedo, API's representative to **IFIP,** with the collaboration of API's representatives to IFIP's TCs

MICROS PLUS CONFERENCE

IFIP's Technical Committee on Education (TC3) and Woolongong University are jointly sponsoring a Working Conference on *Micros Plus: The Educational Implications of Connecting Tools and Devices to Microcomputers.* This will be held 28-30 August in Woolongong, New South Wales, Australia.

The power of the microcomputer to serve education is often greatly enhanced by the special-purpose devices to which it can be attached and which it can control. This is particularly so with regard to individuals with special needs. The Working Conference is concerned with exploring the educational application of devices linked to microcomputers. Contributions from projects collecting data on the implications for students and teachers will be featured. Elementary, secondary, and tertiary education will be addressed.

The Organizing Committee and Program Committee chairmen are Mr. Neil Hall (AUS) and Ms. Sandra Wills (AUS), respectively.

Participants may be interested in these other conferences: the *Fourth Australian Computers in Education Conference "On the Crest of a Wave?"* 24-27 August in Melbourne; and *Microcomputers in Secondary Education,* a regional **IFIP** conference 18-22 August in Tokyo. ■

SITE SELECTION FOR CONGRESS '92

Four Candidates at Present

Mr. James Finch (CDN), chairman of the **IFIP** Congress '92 Site Selection Committee (SSC) reported to the **IFIP** Council at its meeting in Lisbon. (See the article on the Council meeting on page 2.) So far, the following members of **IFIP** have indicated interest in being hosts to **IFIP** Congress '92, the 12th World Computer Congress: Bulgaria (in Sofia), The Netherlands (in Amsterdam), South East Asia Regional Computer Confederation (SEARCC) (in Singapore), and Spain (in Madrid).

Proposals to be host for Congress '92 should be sent to the SSC by 31 December 1986. The SSC will make its recommendation to the **IFIP** General Assembly (GA) in September 1987, and the GA is expected to make its decision at that time.

GA members have been requested in writing by the SSC to confirm immediately their intentions to propose. All who do will be sent the preliminary *Aims and Scope* document of the SSC and the Congress Guidelines manual for their reference.

The site selection decision has become increasingly complex and difficult due to **IFIP** member requirements and the desirability for Congresses to be held at a variety of geographical locations. ■

IMEKO XI PLANNED FOR 1988

The International Measurement Confederation (IMEKO) announces its 11th World Congress to be held 16-21 October 1988 in Houston. This marks the first time the triennial Congress will be held in North America.

IMEKO, a Sister Federation of **IFIP** in the Five International Associations Coordinating Committee (FIACC), comprises 30 Member Organizations from around the world concerned with the problems of measurement theory and practice. The fundamental objective is the promotion of international interchange of scientific and technical information in the field of measurement, and the enhancement of international cooperation among scientists and engineers from research and industry.

Several major developments have influenced measurement technology during the 1980s. Microprocessors have had a profound effect on the way measurement data are processed. Fiber optics is just beginning to show the potential it holds for the transmission of data and for extending the applications of many sensors into harsh and varied environments. Perhaps the most profound recent influences on measurement science are machine vision, artificial intelligence, micro-measurements, and the use of these techniques in manufacturing.

Large scale integrated circuits continue to have much impact on the design, performance, and use of measuring instruments and systems. Low cost data processing facilitates the implementation of measuring systems which were previously not feasible, for technical or economic reasons. Furthermore, the ease of use, accuracy, reliability, and safety of the instrumentation is improved. At the same time, new technology often requires different design and measuring methods.

The aim of this Congress is to report and appraise such developments and in particular to consider the interrelations between new hardware developments and new theoretical concepts over the whole spectrum of modern science and industry. It is expected that the technologies and applications discussed at IMEKO XI will be the foundation for measurement science for many years to come. Thus the theme for IMEKO XI is *Instrumentation for the 21st Century.* ■

NEW PUBLICATIONS

CONFERENCE PROCEEDINGS

Stochastic Differential Systems f
Procs. of the Fourth **IFIP** WG71. Working Conf.
Marseille-Luminy, France, Mar 84 (pub. 85)
M. Metivier, E. Pardoux, Eds.

Database Semantics (DS-1) *
Procs. of the **IFIP** WG2.6 Working Conf.
Hasselt, Belgium, Jan 85
T.B. Steel, R. Meersman, Eds.

CAD/CAM/CAE for Industrial Progress *
Procs. of the **IFIP** TC5 Intl. Conf.
Bangalore, India, Jun 85
V. Rajaraman, Ed.

Fifth Generation Computer Architectures *
Procs. of the **IFIP** TC10 Working Conf.
Manchester, UK, Jul 85
J.V. Woods, Ed.

Computer Message Systems-85 *
Procs. of the **IFIP** TC6 Intl. Symp.
Washington, Sep 85
R.P. Uhlig, Ed.

Computer Networking and Performance Evaluation *
Procs. of the **IFIP** WG7.3 Intl. Seminar
Tokyo, Sep 85
T. Hasegawa, H. Tagaki, Y. Takahashi, Eds.

Foundation for Human Computer Communication *
Procs. of the **IFIP** WG2.6 Working Conf. on the Future of Command Languages
Rome, Sep 85
K. Hopper, I.A. Newman, Eds.

Computer Network Usage: Recent Experiences *
Procs. of the **IFIP** TC6 Working Conf., COMNET '85
Budapest, Oct 85
L. Csaba, K. Tarnay, T. Szentivanyi, Eds.

IFIP READER

Computerization and Work. A Reader on Social Aspects of Computerization t
A Collection of Articles by Members of **IFIP** WG9.1 (pub. 85)
U.Briefs, J. Kjaer, J.-L. Rigal, Eds.

IFIP STATE OF THE ART REPORT

CAM: Developments in Computer-Integrated Manufacturing t
D. Kochan, Ed.

JOURNALS *

Computers in Industry, The International Journal of **IFIP** TC5
six issues per year

Information and Management, The International Journal of Information Systems Applications
ten issues per year

Microprocessing and Microprogramming, The EUROMICRO Journal
ten issues per year

Computer Networks and ISDN Systems, The official Journal of the International Council for Computer Communications
ten issues per year

Computers and Security, The International Journal of **IFIP** TC 11
four issues per year

Pattern Recognition Letters, The Journal of the International Association for Pattern Recognition
six issues per year ■

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t published by Springer-Verlag (1986 unless otherwise noted)

CALLS FOR PAPERS

Working Conference on Expert Systems in Computer-Aided Design
17-20 Feb 87, Sydney, Australia
sponsor: WG5.2
papers due: 14 Jul 86
contact: Prof. John Gero
Dept. of Architectural Science
University of Sydney
NSW 2006 Australia
tel. 61 (2) 692 2328
telex AA26169

8th International Symposium on Computer Hardware Description Languages and Their Applications (CHDL 87)
27-29 Apr 87, Amsterdam
papers due: 30 Jun 86
contact: Dr. M.R. Barbacci
Software Engineering Inst.
Carnegie-Mellon University
Pittsburgh, PA 15213 U.S.A.
tel. 1 (412) 578-7704
ArpaNet: Barbacci@sei

Working Conference on Information Systems Development for Human Progress in Organizations
May/Jun 87, Atlanta, GA, U.S.A.
papers due: 1 Oct 86
contact: Heinz K. Klein
School of Management
State Univ. of New York
Binghamton, NY 13901, U.S.A.
tel. 1 (607) 777-6854

1 1 th Triennial World Congress of the International Measurement Confederation (IMEKO)
16-21 Oct 88, Houston, Texas
sponsor: IMEKO
synopses due: 30 Jun 86
contact: IMEKO Secretariat
POB. 457
H-1371 Budapest, Hungary
tel. 36 (1) 531 562
telex 22 57 92 mtesz h ■

INTERNATIONAL ASSOCIATION FOR OFFICIAL STATISTICS

The International Statistical Institute (ISI) has established a new Section named International Association for Official Statistics (IAOS).

The objectives of the Association will be to promote the understanding and advancement of official statistics and related subjects, and to foster the development of effective and efficient official statistical services through international contacts among individuals and organizations, including users of official statistics and research institutes.

The IAOS will be an international association open to all those who are interested in official statistics in the broadest sense. The membership is not to be restricted to official statisticians, but academic statisticians and others using official statistics are also encouraged to join.

The International Association for Statistical Computing, another section of ISI, is an Affiliate Member of **IFIP.**

Further information may be obtained from-

ISI Permanent Office
428 Prinses Beatrixlaan
P.O. Box 950
2270 AZ Voorburg, The Netherlands ■

CHANGES IN IFIP

(since publication of *Information Bulletin 19* in December 1985)

NEW APPOINTMENTS

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WG OFFICERS

WG5.4 Chairman
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WG10.1 Chairman
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(succeeding Dr. W.H. Giloi)

TC AND WG MEMBERS

TC2 J. Gruska (CS)
(succeeding R.O. Konicek)
K.V. Nori (IND)
(succeeding M. Joseph)

TC3 B. Nag (IND)
(succeeding V. Rajaraman)
A. Suoranta (SF)
(succeeding L. Fontell)

TC5 G. Doumeingts (F)
(succeeding J.P. Crestin)
B.K. Gairola (IND)
(succeeding D.H. Rawal)

WG5.2 H. McLaughlin (USA)
M. Wozney (USA)

WG5.7 H.-H. Beier (D)
G. Halevi (IL)

TC6 P. Jayant (IND)
(succeeding H.N. Mahabala)
K. Rahko (SF)
(succeeding J. Ekberg)

TC7 D.K. Subramanian (IND)
(succeeding N. Seshagiroi)

WG9.1 T.V. Natarajan (IND)

TC10 J. Karjalainen (SF)
(succeeding Y. Neuvo)
H.N. Mahabala (IND)
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ADDRESS (and other) CHANGES

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K.J. MacGregor (ZA)

TC2 Member
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WG5.3 Chairman
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FUTURE IFIP MEETINGS

TECHNICAL COMMITTEE AND WORKING GROUP MEETINGS*

WG2.1	22-26 Sep 86	Malvern, U.K.
	May 87	Montreal
WG2.2	29-30 Aug 86	Ebberup, Denmark
WG2.3	16-20 Jun 86	Lake Balaton, Hungary
WG2.4	10-13 Jun 86	Trondheim, Norway
WG2.5	Jul 86	Chicago
WG2.7	8-12 Sep 86	Dublin
TC3	3 Sep 86	Dublin
TC5	Apr 87	Beijing
TC6	Sep 86	Dublin or Eindhoven
	22-23 May 87	Lisbon
WG6.4	26-28 Nov 86	Toulouse
TC7	2 Jun 86	Rome
TC8	13-14 Jun 86	Vienna
WG8.3	19 Jun 86	Nordwijkerhout, NL
WG8.4	21 Oct 86	Pisa
TC9	29-30 Aug 86	Dublin
TC11	Nov/Dec 86	Monte Carlo

* Please note that some of above are scheduled in conjunction with Working Conferences, for which the conference dates are listed

GENERAL ASSEMBLY AND COUNCIL (and related meetings)

GA	27-31 Aug 86	Dublin
Council	9-12 Mar 87	Singapore
GA	1-5 Sep 87	Budapest
GA	? Aug 89	San Francisco

IMIA

General Meeting	23-25 Oct 86	Washington

CALENDAR OF EVENTS

Event	Date	Location	Sponsored by
Work. Conf. on *Off-Line Programming of Industrial Robots*	2-3 Jun 86	Stuttgart	TC5/WG5.3/IFAC
Intl. Seminar on *Teletraffic Analysis and Computer Performance Evaluation*	2-5 Jun 86	Amsterdam	TC7/WG7.3/ITC
Sixth Work. Conf. on *Protocol Specification Testing and Verification*	10-13 Jun 86	Montreal	TC6/WG6.1
Fifth Intl. Symp. on *Intelligent Measurement*	10-14 Jun 86	Jena, G.D.R.	IMEKO/WG5.3
Work. Conf. on *Decision Support Systems-The Decade in Perspective*	16-18 Jun 86	Noordwijkerhout, NL	TC8/WG8.3
Intl. Workshop on *Advanced Programming Environments*	16-18 Jun 86	Trondheim, Norway	TC2/WG2.4
Fifth Intl. Conf. on *Dynamic Modelling and Control of National Economies*	17-20 Jun 86	Budapest	IFAC/IFIP/IFORS
Work. Conf. on *Mathematical Modelling in Immunology*	Jun 86 ?	Vienna	TC7/WG7.1
Fifth Symp. on *Control in Transportation Systems*	8-11 Jul 86	Vienna	IFAC/IFIP/IFORS
Workshop on *Silicon Compilation*	Jul 86	Edinburgh	TC10/WG10.5
Workshop on *Network Management Systems*	Jul 86 ?	Dallas	TC6/BNR
Work. Conf. on *Changing Requirements for Training and Education in Informatics*	11-15 Aug 86	U.S.A.	TC3/WG3.4
Regional Conf. on *Microcomputers in Secondary Education*	18-22 Aug 86	Tokyo	TC3/IPSJ
Twelfth Intl. Conf. on *Very Large Data Bases-VLDB-86*	25-28 Aug 86	Kyoto	VLDB/IFIP/ INRIA/IPSJ
Third Work. Conf. on *Formal Description of Programming Concepts*	25-29 Aug 86	Ebberup, Denmark	TC2/WG2.2
Second Work. Conf. on *Women, Work and Computerization*	26-28 Aug 86	Dublin	TC9/WG9.1
Work. Conf. on *Information Systems Assessment (ISA)*	27-29 Aug 86	Noordwijkerhout, NL	TC8/WG8.2
Work. Conf. *Micros Plus: The Educational Implications of Connecting Tools and Devices to Microcomputers*	28-30 Aug 86	Woolongong, Australia	TC3/WG3.3
Intl. Workshop on *Performance-Driven Digital System Design*	Aug 86	Los Angeles	TC10/WG10.2
Intl. Workshop on *Software Engineering for CAD Tools*	Aug 86	Bonn	TC10/WG10.2
First Intl. Conf. on *Economics and Artificial Intelligence*	2-4 Sep 86	Aix-en-Provence, France	IFAC/IFIP/IFORS/ AFCET/IASC
Second *European Simulation Congress*	9-12 Sep 86	Antwerp	DBSS/IMACS /ASIM/TC7
Intl. Conf. *ICCC 86-New Communication Services: a Challenge to Computer Technology*	15-19 Sep 86	Munich	ICCC/TC6
Workshop on *Concepts and Characteristics of High-Performance Workstations*	Sep 86		TC10/WG10.1
Conf. on *The Future of Information Systems-Lessons from the 80's*	Sep 86	Linz, Austria	AUSCS/IFIP
Work. Conf. on *Correctness by Construction in Design from HDL Sources*	Sep 86	Grenoble	TC10/WG10.2
Work. Conf. on *Stochastic Differential Systems*	Sep 86 ?	Visegrad, Hungary	TC7/WG7.1/AC.SC
Work. Conf. on *New Technologies in Computerbased Production Management Sys ts.*	1-3 Oct 86	Tokyo	TC5/WG5.7
Intl. Conf. on *Remote Education and Informatics-Tele-Teaching '86*	20-25 Oct 86	Budapest	TC3/JVN Soc
Work. Conf. on *Mass Education and Informatics*	20-25 Oct 86	Laxenburg, Austria	TC3/IIASA
Work. Conf. on *Workable Crypto Management*	22-23 Oct 86	Sweden	TC 11
Work. Conf. on *Methods and Tools for Office Systems*	22-24 Oct 86	Pisa	TC8/CNR
Fifth World Congress on *Medical Informatics-MEDINFO 86*	26-30 Oct 86	Washington, DC	IM11A
Sixth Intl. Conf. on *Instrumentation and Automation in the Paper, Rubber, Plastic and Polymerization Industries-PRP / 6-Automation*	27-29 Oct 86	Akron, OH, U.S.A.	IFAC/IFIP/IMEKO
Work. Conf. on *Knowledge and Data (DS-2)*	3-7 Nov 86	Algarve, Portugal	TC2/WG2.6
Intl. Symp. on *Local Communication Systems, LAN and PBX*	26-28 Nov 86	Toulouse	TC6/WG6.4
Workshop on *CAD Engines*	Nov 86	Japan	TC10/WG10.5
Fourth Intl. Conf. on *Computer Security-IFIP/Sec'86*	2-4 Dec 86	Monte Carlo	TC11/AFCET
Intl. Symp. on *Theory of Robots*	3-5 Dec 86	Vienna	IFAC/IFIP/IMACS
Workshop on *Local Area Networks*	Dec 86	Goa, India	TC6
Work. Conf. on *Computers and Professional Continuing Education*	86 ?		TC3/WG3.2
Work. Conf. on *The Role of Information Systems and of Health Informatics in the Reconstruction of Health Care Systems*	86 ?	Brindisi, Italy	IMIA
Work. Conf. on *Computer Law for the Policy Maker*	Jan 87	Los Angeles	TC9
Work. Conf. on *Expert Systems in Computer-Aided Design*	17-20 Feb 87	Sydney, Australia	TC5/WG5.2
Workshop on *Concepts and Characteristics of Knowledge-Based Environments*	Feb 87		TC10/WG10.1
Work. Conf. on *Opportunities and Risks of Artificial Intelligence Systems*	Mar 87	Hamburg	TC9/GIS
Workshop on *High Speed Circuits*	Mar 87 ?	Munich	TC 10/WG 10.5
Seminar on *Introducing Computer-Aided Techniques in Manufacturing, Engineering, and Management*	1-2 Apr 87	Beijing	TC5
Work. Conf. on *A Computer for Each Student and Its Impact on Teaching and Curriculum in the University*	21-23 Apr 87	Delft	TC3/WG3.2
Eighth Intl. Symp. on *Comp . Hardw. Descrip. Langs. and Their Appins.-CHDL 87*	27-29 Apr 87	Amsterdam	TC10/WG10.2
Work. Conf. on *Artificial Intelligence in Education*	27-30 Apr 87	Denmark	TC3/WG3.3
Work. Conf. on *Message Systems*	Apr 87	F.R.G.	TC6/WG6.5
Seventh Symp. on *Protocol Specification Verification and Testing*	5-8 May 87	Zurich	TC6/WG6.1
Work. Conf. on *Temporal Aspects of Information Systems*	13-15 May 87	Sophia-Antip., France	TC8/WG8.1
Work. Conf. on *Informatics and the Teaching of Mathematics*	17-19 May 87	Sofia, Bulgaria	TC3/WG3.1
First Iberian Conf. on *Data Communications-IBERICOM 87*	18-21 May 87	Lisbon	API/FESI/TC6
Work. Conf . on *Security Management*	20-23 May 87	Canada	TC11 /WG11.2/CIPS
Work. Conf. on *Home Information Systems*	Jun 87	Amsterdam	TC9
Work. Conf. on *Info. Systems Development for Human Progress in Organizations*	Jun 87	Atlanta, GA, U.S.A.	WG8.2

IFIP 86 - 10th World Computer Congress	1-5 Sep 86	Dublin	IFIP
IFIP 89 - 11th World Computer Congress	28 Aug-1 Sep 89	San Francisco	IFIP

Please see page I 1 for schedule of IF11P administrative meetings.